

Claims

1. A controlled release coated product in particulate form which is structured to provide a suppressed initial release period and a predetermined longevity comprising:

- 5 (a) a particulate core material comprising a water soluble fertilizer composition; and
- (b) a single semi-permeable coating layer applied directly onto the surface of the particulate core material for controlling the release rate of the core material so that initial release of core material from the coated
- 10 product is suppressed such that less than 15 weight percent of core material is released from the coated product within a 24 hour period after application of the coated product and longevity of release between the time of application and the time at which at least 75 weight percent of the core material is released from the coated product is 60 days or less at
- 15 ambient temperature of about 21° C; and
- (c) the single semi-permeable coating layer is formed from a composition selected from the group consisting of thermoplastic and thermosetting polymers and resins which form a uniform continuous polymeric film having a WVTR greater than 800 g. $\mu\text{m}/\text{m}^2 \cdot \text{day}$.

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2. The controlled release coated product of claim 1 wherein the thermoplastic and thermosetting polymers and resins are selected from the group consisting of vinyl resins, polyolefines; styrene-based polymers; acrylic polymers; polyesters, poly(oxy alkylene)s, cellulose derivatives, polyamides, polyamines;

25 polycarbonates; polyimides; polysulfones; polysulfides; polysaccharides, polyester resins, epoxy resins; urethane resins; aminoplastics, and dicyclopentadiene ("DCPD") polymers.

3. The controlled release coated product of claim 2 wherein the vinyl resins are

30 selected from the group consisting of poly(vinyl acetate), poly(vinyl alcohol), poly(vinyl chloride), poly(vinylidene chloride), poly(vinyl pyrrolidone), poly(vinyl acetal) and poly(vinyl methylacetamide).

4. The controlled release coated product of claim 2 wherein the polyesters are selected from the group consisting of poly(alkylene terephthalate) and poly(caprolactone).
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5. The controlled release coated product of claim 2 wherein the polyolefines are selected from the group consisting of polyethylene, polypropylene and polyisobutylene.
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6. The controlled release coated product of claim 2 wherein the poly(oxy alkylene)s are selected from the group consisting of poly(ethylene oxide) and poly(propylene oxide).
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7. The controlled release coated product of claim 2 wherein the cellulose derivatives are celluloseacetates.
8. The controlled release coated product of claim 2 wherein the dicyclopentadiene ("DCPD") polymers comprise a cyclo oil alkyd resin based on a natural oil selected from the group consisting of soybean oil and linseed oil.
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9. The controlled release coated product of claim 1 having a longevity of between 28 and 60 days.
10. The controlled release coated product of claim 1 having a longevity of less
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- than 28 days.
11. The controlled release coated product of claim 1 wherein the single semi-permeable coating layer has a thickness of about 20 to about 110 μm .
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12. The controlled release coated product of claim 1 wherein the water soluble fertilizer composition comprises fertilizer granules.

13. The controlled release coated product of claim 1 wherein the core contains at least one secondary nutrient or micronutrient selected from the group consisting of calcium, sulfur, magnesium, iron, copper, zinc, manganese, boron, and molybdenum.
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14. The controlled release coated product of claim 1 employed as a potting soil starter fertilizer composition
15. A process for producing a controlled release coated product in particulate form which is structured to provide a suppressed initial release period and a predetermined longevity comprising:
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- (a) providing a particulate core material comprising a water soluble fertilizer composition; and
 - (b) applying a single semi-permeable coating layer directly onto the surface of the particulate core material to enable the core material to release from the coated product at a rate wherein initial release of core material from the coated product is suppressed so that less than 15 weight percent of core material is released from the coated product within a 24 hour period after application of the coated product and wherein longevity of release between the time of application and the time at which at least 75 weight percent of the core material is released from the coated product is 60 days or less at ambient temperature of about 21° C; the single semi-permeable coating layer being formed from a composition selected from the group consisting of thermoplastic and thermosetting polymers and resins which form a uniform continuous polymeric film having a WVTR greater than 800 g.µm/m².day.
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16. The process of claim 15 wherein the thermoplastic and thermosetting polymers and resins are selected from the group consisting of vinyl resins, polyolefines; styrene-based polymers; acrylic polymers; polyesters, poly(oxy alkylene)s, cellulose derivatives, polyamides, polyamines; polycarbonates; polyimides; polysulfones; polysulfides; polysaccharides, polyester resins, epoxy
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resins; urethane resins; aminoplastics, and dicyclopentadiene ("DCPD") polymers.

17. The process of claim 16 herein the vinyl resins are selected from the group
5 consisting of poly(vinyl acetate), poly(vinyl alcohol), poly(vinyl chloride),
poly(vinylidene chloride), poly(vinyl pyrrolidone), poly(vinyl acetal) and
poly(vinyl methylacetamide).

18. The process of claim 16 wherein the polyesters are selected from the group
10 consisting of poly(alkylene terephthalate) and poly(caprolactone).

19. The process of claim 16 wherein the polyolefines are selected from the group
consisting of polyethylene, polypropylene and polyisobutylene.

15 20. The process of claim 16 wherein the poly(oxy alkylene)s are selected from
the group consisting of poly(ethylene oxide) and poly(propylene oxide).

21. The process of claim 16 wherein the cellulose derivatives are
celluloseacetates.

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22. The process of claim 16 wherein the dicyclopentadiene ("DCPD") polymers
comprise a cyclo oil alkyd resin based on a natural oil selected from the group
consisting of soybean oil and linseed oil.

25 23. The process of claim 15 for producing a coated product having a longevity of
between 28 and 60 days.

24. The process of claim 15 for producing a coated product having a longevity of
less than 28 days.

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25. The process of claim 15 wherein the single semi-permeable coating layer has
a thickness of about 20 to about 110 μm .

26. The process of claim 15 wherein the water soluble fertilizer composition comprises fertilizer granules.

- 5 27. The process of claim 15 wherein the particulate core material includes at least one secondary nutrient or micronutrient selected from the group consisting of calcium, sulfur, magnesium, iron, copper, zinc, manganese, boron, and molybdenum.

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